

CLAIMS

1. A polymer actuator which comprises a plurality of gel/electrode complexes arranged in an electrolytic aqueous solution, said gel/electrode complex being composed of a polymer gel containing at least either of acidic or basic functional groups and electrodes placed in the polymer gel, said electrodes being made of a material capable of occluding and releasing hydrogen electrochemically, such that the polymer gel in the gel/electrode complex changes in pH upon application of voltage across the electrodes of the gel/electrode complexes and each of the gel/complexes changes in volume in response to the pH change.

2. The polymer actuator as defined in Claim 1, wherein the electrode of the gel/electrode complex is made of palladium or palladium-containing alloy.

3. The polymer actuator as defined in Claim 1, wherein the electrode of the gel/electrode complex is made of hydrogen-occluding alloy coated with palladium.

4. The polymer actuator as defined in Claim 1, wherein the electrode of the gel/electrode complex is in the form of coil or mesh.

5. The polymer actuator as defined in Claim 1, wherein the electrode of the gel/electrode complex is in

the form of granule or fiber which is dispersed in the polymer gel.

6. The polymer actuator as defined in Claim 1, wherein the electrode of the gel/electrode complex is composed of a coiled or mesh-like object and a granular or fibrous object.

7. The polymer actuator as defined in Claim 1, which has more than one unit of the gel/electrode complex formed from a polymer gel containing acidic functional groups and more than one unit of the gel/electrode complex formed from a polymer gel containing basic functional groups.

8. The polymer actuator as defined in Claim 1, wherein the polymer gel of the gel/electrode complex contains a mixture of a polymer containing acidic functional groups and a polymer containing basic functional groups.

9. The polymer actuator as defined in Claim 1, wherein the gel/electrode complexes are arranged in a container which is filled with said electrolytic solution and said container has electrodes projecting from its both ends.

10. The polymer actuator as defined in Claim 9, wherein said container is capable of expanding or contracting in response to the volume change of the gel/electrode

complexes.